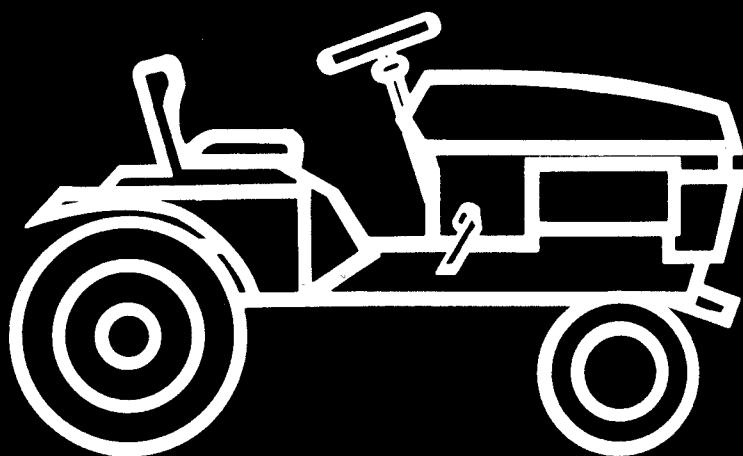


# Ariens

## 931 Series

**GT**  
**Hydrostatic**  
**Garden Tractor**

**Owner's  
Manual**



# A Message to Ariens Customers. . .

Welcome to the world of Ariens equipment. We are pleased that you have selected Ariens and sincerely believe you have purchased the best equipment available. The care you give your new Ariens equipment will determine the satisfaction and service life you will obtain from it. Use this manual and the engine manual supplied, as your guide. By observing the instructions and suggestions in these manuals, your Ariens equipment will serve you well for many years.

Your Ariens dealer will be happy to supply any service or advice which may be required to keep your Ariens equipment operating at peak efficiency. He stocks genuine Ariens parts and lubricants manufactured with the same precision and skill as the original equipment. His factory trained staff is kept well informed on the best methods of servicing Ariens equipment and is ready and able to

serve you. If engine repairs or services are required, they can be obtained from an Ariens dealer or from an authorized engine manufacturer's service station. If service is required, be prepared to supply the service person with the Model Number and Serial Number of the equipment and the engine, as well as a full description of the problem encountered.

**NOTE:** The descriptions and specifications contained in this manual were in effect at the time the manual was approved for printing. Ariens company reserves the right to discontinue models without notice and without incurring obligation. The equipment described within this manual may not be identified as either standard or optional and the various illustrations may not all be applicable to your particular tractor. If you have questions, always check with your Ariens dealer.

## Safety Alert Symbol and Notations

The following safety notations are used throughout this manual to call attention to special information or operating procedures. Understand the message in each notation and be alert to unsafe conditions and the possibility of personal injury.

**NOTE:** A **NOTE** points out general reference information regarding proper operation and maintenance practices.

**IMPORTANT:** An **IMPORTANT** statement indicates specific procedures or information that is required to prevent damage to the machine or its attachments.



This safety alert symbol is used to attract your attention! PERSONAL SAFETY IS INVOLVED! When you see this symbol - BECOME ALERT - HEED ITS MESSAGE.



**CAUTION:** A CAUTION identifies safe operating practices or indicates unsafe conditions that could result in personal injury.



**WARNING:** A WARNING describes a condition where failure to follow the instructions could result in severe personal injury.



**DANGER:** A DANGER designates a condition where failure to follow instructions or heed warning will most likely result in serious personal injury or death.

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# Models

**Model 931033 (GT18)**  
18 HP Hydraulic Drive  
Serial Number 004001 and up

**Model 931034 (GT20)**  
20 HP Hydraulic Drive/w Rear PTO  
Serial Number 004001 and up

This manual covers the above models. Specific Model and Serial Numbers of your tractor are on a label on tractor frame located near engine. Record these numbers below and use them whenever parts or service are required.

**Serial Number - Tractor** \_\_\_\_\_

**Serial Number - Engine** \_\_\_\_\_

**NOTE:** All references to "Left", "Right", "Front" and "Back" are given from operator's position.

## Safety Precautions

### Training

Read and understand this Owner's Manual and engine instructions as well as attachment(s) Owner's Manual(s) before operating this unit. Be thoroughly familiar with controls and proper use of equipment. Know how to stop unit and disengage controls quickly in an emergency.

Understand and follow each Danger, Warning, Caution and instruction decal installed on equipment.

Use only attachments or accessories designed for your unit. See your Ariens Dealer for a complete list of recommended attachments or accessories.

Keep the area of operation clear of all persons, particularly children and pets.

NEVER allow children to operate equipment. DO NOT allow adults to operate unit without proper instructions.

Safe operation of this equipment requires your complete and unimpaired attention at all times. DO NOT operate unit after or during the consumption of medications, drugs or alcohol.

DO NOT carry passengers.

### Preparation

Thoroughly inspect and clear work area of objects which might be picked up and thrown. Remove all stones, sticks, wires, bones and other foreign objects.

# Safety Precautions (Continued)

Wear sturdy footwear. DO NOT operate tractor barefoot or when wearing open sandals or canvas shoes. DO NOT wear loose clothing that may get caught in rotating parts of unit.

NEVER attempt to make any adjustments to unit while engine is running (except where specifically recommended).

Gasoline is highly flammable and its vapors are explosive. Handle with care. Use an approved (RED) gasoline container.

NEVER allow smoking materials, sparks or flame (match, pilot light, etc.) near tractor or gasoline container.

Check fuel supply before starting engine. DO NOT fill gasoline tank indoors, when engine is running or while engine is still hot. Wipe off any spilled gasoline before starting engine.

## Operation

Keep equipment in good condition. Keep all shields in place and safety devices operating properly.

Sit on seat, disengage all attachment clutches and make sure Speed Selector is in Neutral (N) position before attempting to start engine.

Open doors if unit is run in garage, exhaust fumes contain carbon monoxide, an odorless and deadly gas. DO NOT run engine in enclosed or poorly ventilated areas.

Operate equipment only when there is good visibility and light.

Disengage power to attachment when attachment is being transported or is not in use.

Look behind and use care when backing. Someone may have come up behind you.

NEVER direct discharge of material toward bystanders nor allow anyone near equipment while unit is in operation. The operator is responsible for the safety of bystanders.

Be familiar with area of operation. Stay alert for holes, rocks, roots and hidden hazards in area of operation. Keep away from drop-offs.

Exercise extreme caution when operating on or crossing gravel drives, walks or roads. Stay alert for hazards and traffic.

Tipping and/or loss of control of unit can be caused by; operating on slopes, rough terrain, turns, speed changes, slippery surfaces, and rear attachment load as well as any combination of them.

Reduce speed and exercise extreme caution on slopes and in sharp turns to prevent tipping or loss of control. Be especially cautious when changing direction on slopes and operating on wet or slippery surfaces.

DO NOT stop or start suddenly when going uphill or downhill. Mow up and down face of steep slopes: NEVER across face. If slope is too steep to back tractor up; slope is too steep for safe operation.

Disengage power to attachment(s), set parking brake, stop engine, remove key and wait for moving parts to stop before leaving operator's position for any reason such as unclogging discharge chute, when making any repairs, adjustments, inspections or cleaning unit.

DO NOT touch equipment parts which might be hot from operation. Before attempting to maintain, adjust or service, allow such parts to cool.

If equipment vibrates abnormally, disengage attachment(s), set parking brake, stop engine at once and remove key. Abnormal vibration is a warning of trouble. Repair any damage before restarting unit. (See your Ariens Dealer).

After striking a foreign object, disengage power to attachment, set parking brake, stop engine and wait for moving parts to stop before leaving operator's position. Thoroughly inspect unit for any damage and repair damage before restarting and operating unit.

# Safety Precautions (Cont.)

Take all possible precautions when leaving unit unattended. Disengage power to attachment, lower attachment so it is resting on ground or floor, engage parking brake, stop engine and remove key to prevent unauthorized use.

## Maintenance and Storage

DO NOT change engine governor setting or over speed engine.

Keep all nuts, bolts and screws tight and be sure equipment is in safe working condition. Check all hardware at regular intervals.

To reduce fire hazard and overheating, keep equipment free of grass, leaves, debris or excessive grease.

Worn out mufflers are more than just a noise nuisance and should be replaced immediately. Continued use could result in fire or explosion.

NEVER store equipment with gasoline in tank inside a building where fumes may reach an open flame or spark. Allow engine to cool before storing in any enclosure.

Refer to Storage Section of this Owner's Manual for important instructions if unit is to be stored for extended periods.

## Safety Decals

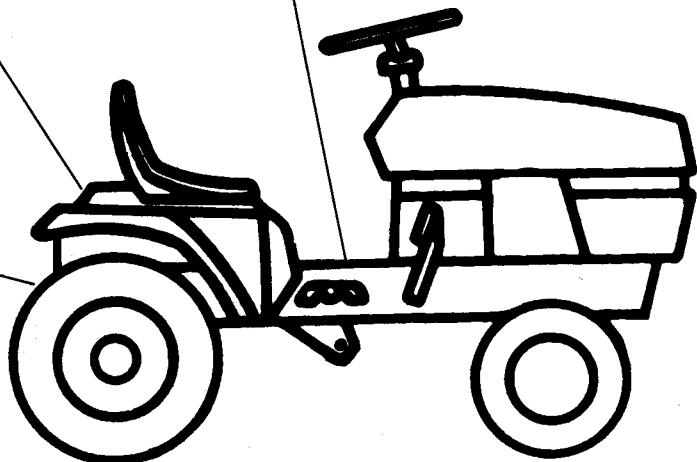
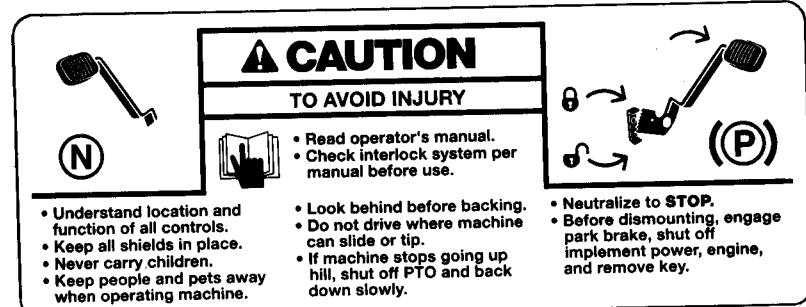


Figure 1: Safety Decal Locations

# Dealer Preparation For Operation

**CUSTOMER NOTE:** Your Ariens Dealer is expected to complete these preparation steps and review important information, including this manual, with you before or upon delivery of machine or attachment.

The preparation information is included here so that you and your dealer may review it together.

**IMPORTANT:** Engine on tractor was shipped without oil in crankcase. Refer to Engine Instruction Manual for proper type oil and crankcase capacity.

When removing tractor from carton, push manually only a short distance (10-15 feet) with Free Wheeling Valve open (rotate cam up) and Speed Selector in Neutral (N) position.

**IMPORTANT:** NEVER push or pull (tow) tractor with another vehicle. Transmission damage will occur. When transporting use truck or trailer.

## Steering Wheel Assembly

Assemble steering wheel on column shaft and secure with 5/8" hex jam lock nut. Place plastic cap into steering wheel hub.

## Tire Pressure

Check tire pressure using a low pressure tire gauge for accurate reading. For correct pressure refer to Tire Pressure in Specifications.

## Battery

Remove battery from tractor, refer to Lubrication and Maintenance Section of the manual. Remove filler plug and fill with electrolyte away from unit. Charge battery at a rate of 4 to 6 Amps for 10 hours.

**IMPORTANT:** Charging battery at a higher rate will damage battery.



**CAUTION:** Reversed connections can cause sparks or damage to product.

Reinstall battery in tractor making certain that ground cable (-) terminal is connected to frame and positive cable (+) is connected to positive (+) terminal.

## Fuel



**WARNING:** Gasoline is highly flammable and its vapors are explosive. Handle with care. Use an approved (RED) gasoline container.

Fill fuel tank with unleaded gasoline. DO NOT use premium or gasohol. Tank capacity is 4.5 gallons.

## Transmission Oil Level

The tractor rear axle is the common oil reservoir for the hydraulic systems. If hydraulic system has lost its prime, re-prime according to instructions in Lubrication and Maintenance Section of this manual.

**IMPORTANT:** Proper oil level and circulation is essential for proper operation and protection against severe damage to transmission.

To check hydraulic systems oil level refer to Lubrication and Maintenance Section, of this manual.

**NOTE:** For heavy or high temperature use refer to transmission oil requirements in Lubrication and Maintenance Section.

# **Dealer Preparation For Operation (Continued)**

## **Safety Interlock System**

Check the Safety Interlock System to make sure that it has not become inoperable during shipment.



**CAUTION:** The tractor must not start unless Speed Selector is in neutral (N) and Implement Power Take-Off (PTO) Switch Knobs are in the "OFF" (Pushed In) position. Engine MUST stop if operator leaves seat when Speed Selector is in any other position or with PTO "ON".

If engine starts with controls in any other position, the safety interlock must be corrected before delivery. (Refer to Repair Manual).

**NOTE:** Check for addition of weights or tire chains required for attachments.

## **Registration**

Complete the Garden Tractor Pre-delivery Checklist and Prewarranty Registration Form and mail original copy to Ariens Company.

Warranty is registered under model and serial number found on label attached to frame near engine.

## **Delivery**

Using the Owner's Manual instruct the customer on controls and operation of tractor. Emphasize safety and discuss the Safety Precautions.

Explain recommended lubrication and maintenance of the unit.

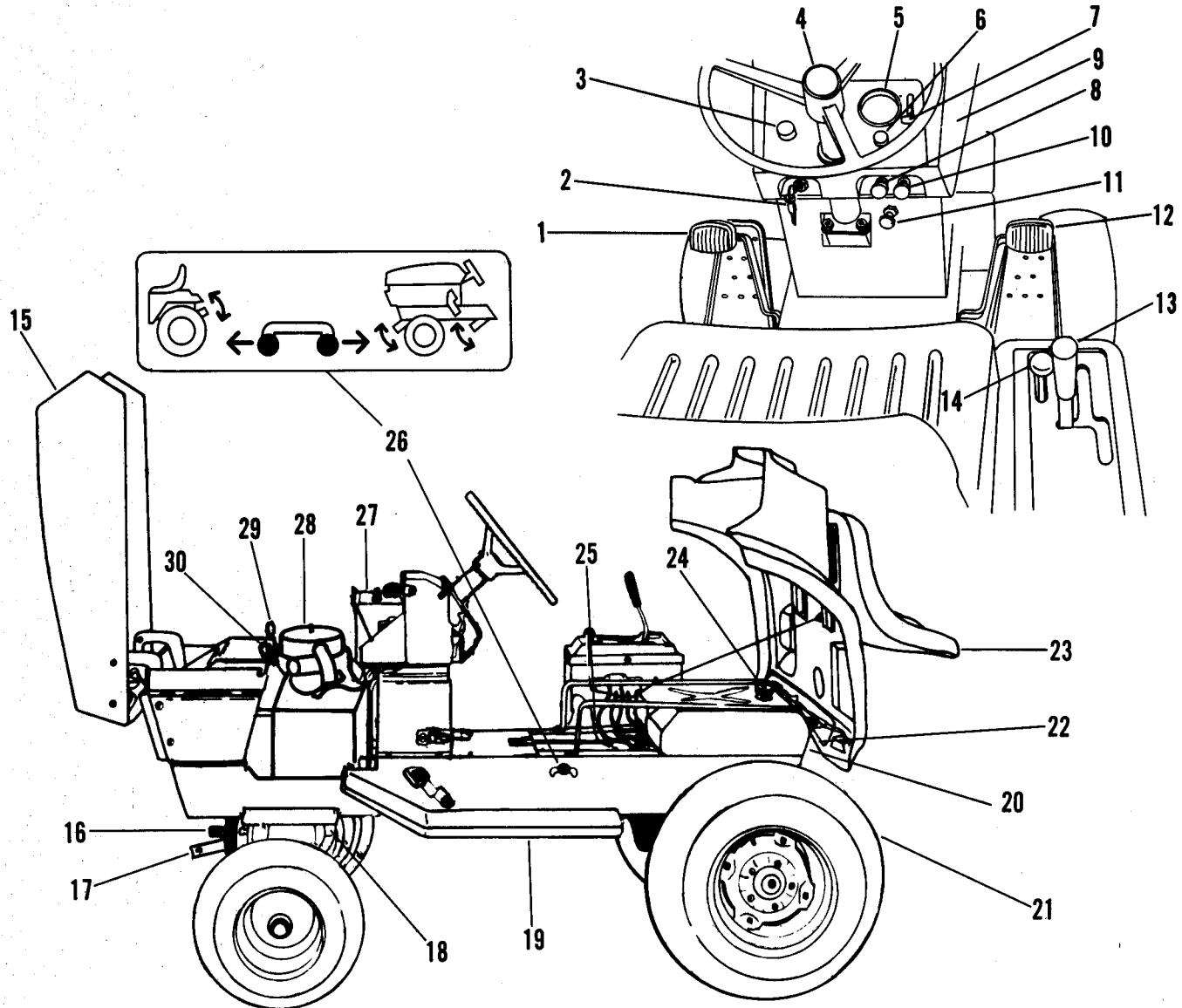
**IMPORTANT:** Remind customer to change oil in engine crankcase after first five (5) hours of operation.

Advise customer on adjustments, demonstrate how to put on and remove attachments.

Explain Ariens Company Limited Warranty Policy, fill out Original Purchaser Registration Card, Parts and Repair Manuals Order Form and return to Ariens Company. Place Model and Serial Number on page (1) of this manual.

Give customer his Owner's Manual and engine manufacturer instructions. Advise him to thoroughly read and understand them.

# Controls and Features



1. Neutralizer Pedal
2. Ignition Switch
3. Implement Power Take-Off (PTO) Indicator Light
4. Steering Wheel
5. Voltmeter
6. Choke
7. Throttle
8. Light Switch
9. Hour Meter
10. Front and Center Implement Power Take-Off (PTO) Switch
11. Rear Implement Power Take-Off (PTO) Switch (GT20)
12. Brake Pedal
13. Speed Selector
14. Hydraulic Lift

15. Hood
16. Front Power Take-Off (PTO)
17. Front Rock Shaft
18. Center Power Take-Off (PTO)
19. Center Rock Shaft
20. Rear Power Take-Off (PTO) (GT20)
21. Transmission Oil Level and Filler
22. Rear Rock Shaft
23. Rear Deck and Seat
24. Fuel Tank and Cap
25. Free-Wheeling Valve
26. Lift Selector
27. Battery
28. Air Cleaner
29. Engine Oil Filler
30. Engine Oil Dip Stick

Figure 2: Controls and Feature Locations

# Operation

## PRE-STARTING

Check that engine crankcase oil is full using dipstick. Refer to Lubrication and Maintenance Section to add or change.



**CAUTION:** Make sure all hardware is tight, all safety devices in place and all adjustments correct.

Check air filter and precleaner for dirt. Clean as required.

Check fuel supply. Wipe dust, dirt and debris from around cap before removing to prevent foreign particals from entering tank while filling. Fill gasoline tank with good grade of fresh unleaded gasoline (leaded if unleaded is unavailable). DO NOT use premium, gasohol or mix gasoline with oil.



**WARNING:** Gasoline is highly flammable and must be handled with care. Never fill tank when the engine is running or hot from operation. DO NOT allow open flame, matches or smoking in area. DO NOT overfill. Wipe up any spills. Use approved (RED) gasoline container.

## Seat

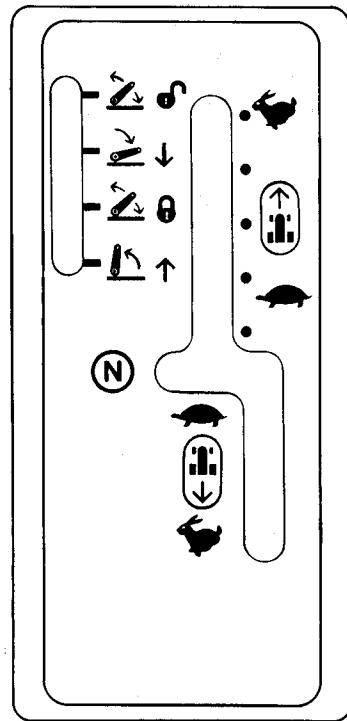
Be sure all controls can be reached safely from operator's position. To move seat, push and hold lever under seat to left, move seat to front or rear and release lever.

The seat interlock switch is actuated by the operator's weight. If operator leaves seat when Speed Selector is not in neutral (N) or Implement Power is engaged (ON) engine ignition must shut off.

**NOTE:** Check interlock system before each day's usage.



**WARNING:** Failure of Interlock, together with improper operation of unit, could result in severe personal injury.



**Figure 3: Speed Selector and Hydraulic Lift**

## Speed Selector

The Speed Selector must be placed in the neutral "N" position before engine will start. Selector controls both tractor speed and direction. Moving Speed Selector forward from neutral "N" increases forward travel speed. Moving Speed Selector backward from neutral "N" increases reverse travel speed. In neutral "N" position, hydrostatic system provides braking action to wheels.

# Operation (Continued)

## Implement Power Take-Off(s) (PTO's)

The Implement PTO Switch Knob(s) MUST be pushed in "OFF" before engine will start. The Implement PTO Indicator Light glows red (with Ignition Key "ON") when PTO clutch(es) is/are engaged.

## Choke

Pull Choke Control Knob all the way out to start a cold engine. It should not be necessary to use choke when starting a warm engine.

## STARTING ENGINE



**WARNING: DO NOT attempt to start your engine at this time. Thoroughly read entire Operator's Manual first.**

## Throttle

The Throttle controls engine speed. To increase engine speed push up, to decrease engine speed pull down. Set Throttle approximately 1/3 of FAST position to start engine and when engaging PTO's.

## Ignition

To start engine place Ignition Key in Ignition Switch and turn it clockwise to START position. When engine starts, release Ignition Key. Turn Ignition Key counterclockwise to "OFF" to stop engine.



**CAUTION: Turn Ignition Key "OFF" and remove it before attempting any maintenance, adjustment or leaving tractor unattended.**

When engine starts, gradually push choke in.

If engine fails to start on the first attempt, turn Ignition Key to "OFF", wait a few minutes and try again.

**IMPORTANT:** DO NOT operate starter motor continuously more than 30 seconds at a time as overheating and damage will occur.

After engine has started allow it to warm up before applying load.

**IMPORTANT:** Run engine at 1/3 Throttle for at least five minutes in below freezing temperatures to prevent serious internal damage to engine and hydrostatic transmission.

**IMPORTANT:** The Speed Selector is sensitive to the slightest movement. Because of dynamic braking characteristics of the hydrostatic transmission move Speed Selector slowly in normal operation.

**NOTE:** A slight amount of tractor movement when tractor is stopped on hill or grade is normal after Speed Selector is positioned in neutral (N) unless brakes are applied.

## Neutralizer Pedal

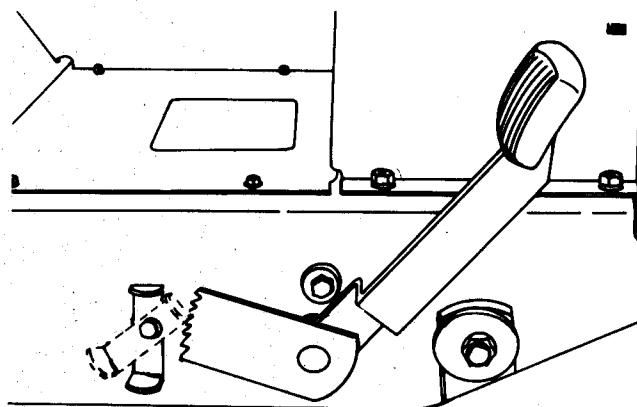
When Neutralizer Pedal is fully depressed the Speed Selector returns to neutral (N) and forward or reverse motion of tractor stops. The pedal is an alternate to the Speed Selector for slowing down or stopping.

**IMPORTANT:** Keep foot off Neutralizer Pedal except for reducing speed or stopping. DO NOT use pedal and Speed Selector simultaneously. Misadjustment of hydrostatic linkage will result.

# Operation (Continued)

## Brake Pedal

When Brake Pedal is depressed with Speed Selector in neutral (N) position friction brakes are applied to stop the unit. Hydrostatic transmission provides dynamic braking when Speed Selector is moved toward neutral (N) position. Brake Pedal is not normally used except for emergency stops.



1. Latch Disengaged
2. Latch Engaged
3. Brake Pedal

Figure 4: Brake Pedal and Latch

## Parking Brake



**CAUTION:** Before leaving operator's position, engage Parking Brake latch or unit may roll.

The Parking Brake locks the Brake Pedal. To apply the Parking Brake, depress the Brake Pedal and lift Latch. To disengage, depress Brake Pedal, disengage Latch and release Brake Pedal.

**NOTE:** Latch can be engaged with shoe heel.

## Stopping Tractor

To stop tractor return Speed Selector to neutral (N), either by hand or depress Neutralizer Pedal. Then step on Brake Pedal to stop tractor if it continues to roll.

## Emergency Stops

For emergency stops, depress both Neutralizer and Brake Pedals at same time.

**NOTE:** Practice using Neutralizer Pedal for all slowing down and stopping operations. This will make emergency stops become automatic.

## Implement Power Take-Off (PTO) Switches



**CAUTION:** PTO switch(es) control rotating parts. Keep hands, feet, hair and clothing away from rotating parts.

To engage front and center PTO pull upper switch knob out (ON). To disengage push switch knob in (OFF). On models with Rear PTO, lower switch controls rear PTO in same way.

**NOTE:** The Implement Power Switch Knob(s) MUST be pushed in (OFF) before engine will start. They should also be pushed in (OFF) before operator leaves seat or clutch(es) will disengage. If clutch(es) have disengaged automatically by the interlock system (indicator light off) Implement PTO Switch Knob(s) must be pushed in to reset. To re-engage desired clutch, pull desired Implement PTO switch knob out (ON).

**IMPORTANT:** Set Throttle at 1/3 before engaging PTO.

# Operation (Continued)

## Implement Power Take-Off (PTO) Indicator Light

PTO Indicator Light glows red when Implement PTO Switch Knob(s) is/are pulled out (ON) and a clutch engaged, indicating that implement PTO is engaged.

## Hydraulic Lift

Hydraulic Lift control is used for raising (UP), lowering (DOWN), keeping attachment in position (HOLD) or allowing attachment to lower itself and follow ground contours (FLOAT).

## Lift Selector

When Lift Selector is in its forward position, rear rock shaft is operational. When it is in rear position, front and center rock shafts are operational.

**NOTE:** In order to change Lift Selector position, Hydraulic Lift MUST be in raised (UP) position. If Lift Selector should hang up, with an attachment on tractor, manually move alternate rock shaft arm up.

## Light Switch

Light Switch Knob must be pulled out to turn on front and rear lights when Ignition Switch is on. Push it in to turn them off.

## Voltmeter

Voltmeter indicates condition of battery charge or discharge. It should register 12 to 15 volts when engine is running at any speed above a slow idle. When engine is off, voltmeter should show 11 to 13 volts. When voltmeter indicates 11 or fewer volts, battery or engine service may be required.

**IMPORTANT:** DO NOT engage PTO clutch(es) when voltmeter indicates 11 or fewer volts or clutch damage may result.

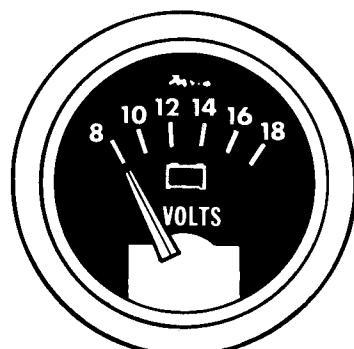


Figure 5: Voltmeter

## Hour Meter

Hour Meter operates when Ignition Switch is in the RUN position and records actual time engine operates.

**IMPORTANT:** Keep a record of Hour Meter readings for recommended Lubrication and Maintenance intervals.

**NOTE:** For accurate readings be sure Ignition Switch is OFF and weight removed from seat when tractor is not in operation.

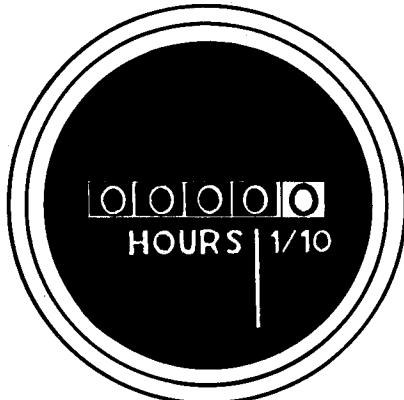


Figure 6: Hour Meter

# Operation (Continued)

## Stopping Engine

To stop engine, position Speed Selector in neutral (N) position, depress Brake pedal and engage Parking Brake.

Push Implement Power Control Knob(s) in to shut off power to attachment PTO(s), and lower attachment so that it rests on floor or ground.

Lower engine speed to idle, by lowering Throttle, and allow engine to idle for a few minutes so that engine parts can cool evenly before being shut off.

Turn Ignition Key counterclockwise to stop engine.



**CAUTION: Set Parking Brake to prevent unit from rolling and remove Ignition Key to prevent accidental starting or unauthorized use.**

**NOTE:** Ignition Key must be OFF and weight removed from seat to prevent hour meter run-on and battery drain, when tractor is not in operation.

## Steering

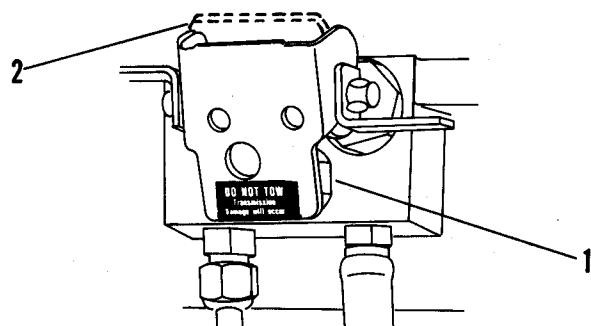
Your tractor is equipped with Power Steering for easier operation.

**NOTE:** When lifting attachment, Power Steering momentarily requires greater steering effort due to greater hydraulic system requirements. Release lever to resume power to steering.

## Free-Wheeling Valves



**CAUTION: For dynamic braking Free-Wheeling Valves must be closed (Cam down - Buttons out) at all times when tractor is in operation.**



1. Cam Down (Traction Drive)
2. Cam Up (Free-Wheeling)

Figure 7: Free-Wheeling Valve

**IMPORTANT: DO NOT push or pull (tow) tractor with another vehicle as transmission damage will occur. When transporting use truck or trailer.**

To manually push tractor with engine stopped, open Free-Wheeling Valves by rotating cam up. (Valve is located under rear deck). This presses buttons in and opens the by-pass. Place Speed Selector in the neutral (N) position. The tractor may now be manually pushed only short distances (10 to 15 feet). Greater distances will result in transmission damage because of a lack of transmission oil circulation.

# Lubrication and Maintenance

**IMPORTANT:** Change oil after first five hours of operation on new engine, thereafter follow chart below.

## Lubrication and Maintenance Schedule

Hours of Operation/ Time Interval	Service Required
Every 5 Hours or Daily	Check Engine Crankcase Oil
Every 25 Hours or Monthly	Service Engine Air Filter and PreCleaner Service Battery Check Tire Pressures Check Transmission Oil Level Clean Park Lock Assembly Oil Hydrostatic Control Linkage
Every 50 Hours or Quarterly	* Change Engine Oil Grease Steering System Clean Engine Cooling Fins Clean Transmission Cooling Fins Check Spark Plug
Every 100 Hours or Semi-Annually	Clean Paper Air Filter Element
Every 250 Hours or Yearly	Change Fuel Filter

\* 25 hours for continuous and/or heavy duty operation.

Ariens dealers will provide any service which may be required to keep tractor operating at peak efficiency. Tractor is equipped with the finest quality engine obtainable. However, should servicing be required, it can be obtained from an Ariens dealer or an authorized engine manufacturer's service center.

## Engine Oil

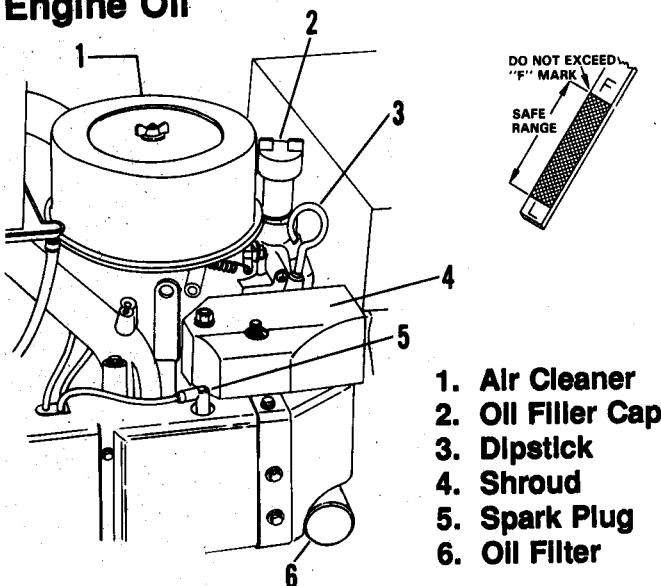


Figure 8: Engine Air Cleaner, Oil Filler,  
Dipstick and Shroud

## Checking

Engine crankcase oil should be checked daily or every five hours of operation. Oil level MUST be maintained in safe operating range on dipstick at all times or engine damage will result.



**CAUTION: DO NOT touch tractor parts which might be hot from operation**

To check oil, park tractor on a flat level surface, place Speed Selector in neutral and set brake. Stop engine, raise hood and wipe all debris from around dipstick. Pull dipstick and wipe oil off, reinsert and push it down tightly. Remove dipstick and observe oil level. Add clean fresh oil of same type and viscosity as is in engine to bring oil level to Full (F) mark if low (refer to Engine Manufacturer's Manual).

**IMPORTANT: DO NOT overfill. Level must not exceed full (F) mark. Overheating and engine damage will occur.**

**NOTE: Dipstick and oil fill openings are separate.  
DO NOT add oil at dipstick opening.**

## Changing

**IMPORTANT: Change oil after first five hours of operation, thereafter change oil every fifty hours of operation (more often in dusty dirty conditions). Refer to Engine Manufacturer's Manual for proper type and viscosity.**



**CAUTION: Before changing oil, place Speed Selector in neutral (N), turn Ignition OFF, remove key and set Parking Brake.**

**NOTE: Run engine just prior to changing oil. Oil will flow more freely and carry away more contamination when warm.**



**CAUTION: DO NOT touch tractor parts and oil which might be hot from operation.**

# Lubrication and Maintenance (Continued)

Drain crankcase by removing oil drain plug. When oil has drained replace plug and lift hood. Remove oil fill plug and refill crankcase with three (3) U.S. pints of proper oil (refer to Engine Manufacturers Manual). Recheck oil level with dipstick.

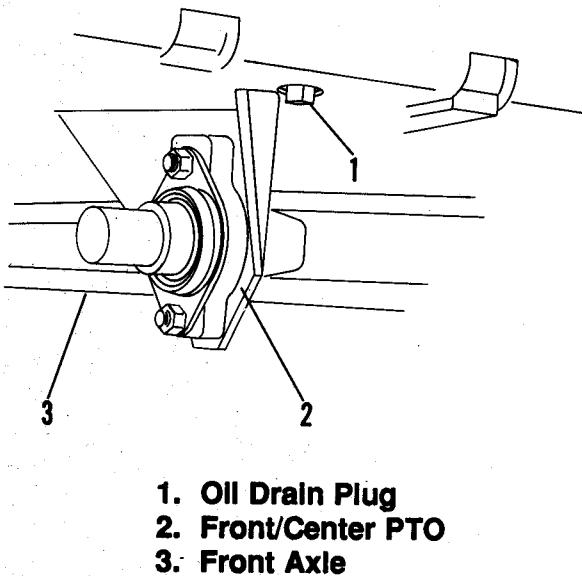


Figure 9: Oil Drain Plug Location

## Oil Filter

Oil filter should be changed at every other oil change. (Always use a genuine Kohler oil filter).

**NOTE:** Filter requires an additional 1/2 pint of oil (3.5 pints total).

To change oil filter, drain engine crankcase and then remove old filter.

Apply a thin coating of oil on surface of rubber seal before installing new filter.

Turn filter clockwise until rubber seal contacts filter adapter, then tighten filter an additional 2/3 to 3/4 turn.

Start engine and check for oil leakage around filter and at drain plug.

## Engine Cooling

Engine is air cooled. Air must circulate freely around engine from air intake screen, over cooling fins on cylinder head and block to prevent overheating.

**IMPORTANT:** Make sure air intake screen is clean and not obstructed. If debris builds up on screen during engine operation, STOP engine immediately and clean air intake screen. An obstructed screen can cause engine overheating.

Every fifty (50) operating hours (more often if conditions require) remove cooling shrouds and clean cooling fins. Also clean external surfaces of your engine of dust, dirt and oil deposits which can contribute to improper cooling.

**IMPORTANT:** DO NOT operate engine with cooling shrouds removed - this will cause overheating and engine damage.



**WARNING:** Engine and exhaust system get extremely hot from operation. DO NOT operate tractor with equipment covers or guards removed. Keep hands, feet, hair and clothing away from all rotating parts.

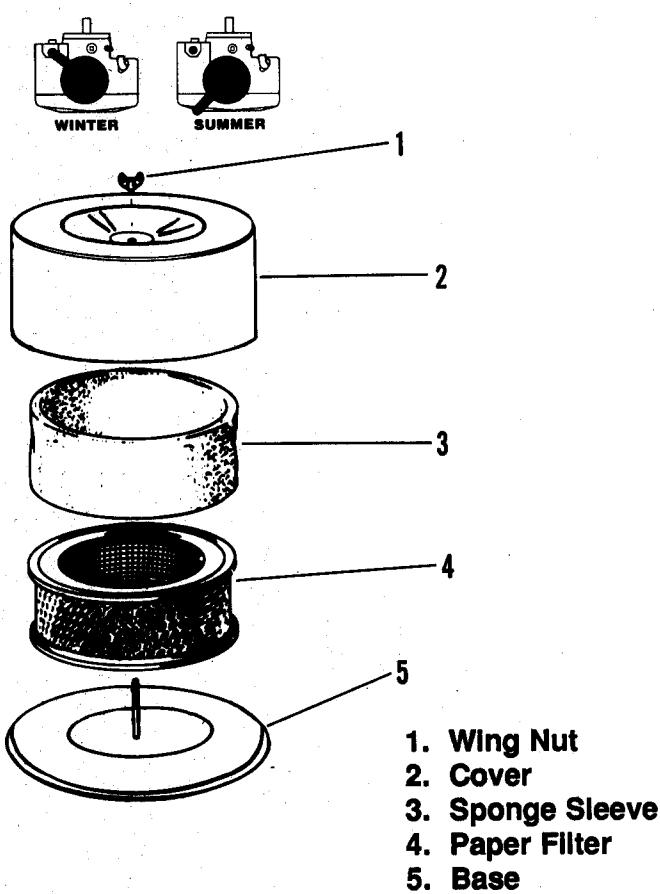
## Air Cleaner

**IMPORTANT:** DO NOT run engine with Air Cleaner removed. Operating engine with a dirty air filter for only a brief period of time can cause engine damage. DO NOT wash element or blow dirt off with compressed air, this will damage element.

Precleaner should be washed every twenty-five (25) operating hours, or more often under extremely dirty, dusty conditions.

To clean Precleaner and check or change Filter Element, remove Wing Nut and Air Cleaner Cover. Remove Precleaner from Air Cleaner.

# Lubrication and Maintenance (Continued)



**Figure 10: Air Cleaner**

Wash Precleaner in warm water with detergent. Rinse thoroughly until all traces of detergent are eliminated and squeeze (don't wring) away excess water. Air dry.

Soak Precleaner in fresh, clean engine oil and squeeze out excess oil. Reassemble precleaner and element in air cleaner. Reinstall air cleaner cover.

Inspect Air Cleaner Element every fifty (50) operating hours, and replace when damaged or dirty. Check more frequently under dirty, dusty conditions.

Check filter element and tap lightly to remove light dust. Examine element carefully and replace it if bent, crushed, damaged or dirty.

**NOTE:** Position Air Cleaner Snorkel for appropriate summer or winter operation.

**NOTE:** Air cleaner cover wing nut must be tightened 1/2 to 1 full turn after nut contacts cover. DO NOT overtighten.

## Transmission Oil



**CAUTION: Keep hands, feet, hair and clothing away from rotating parts.**

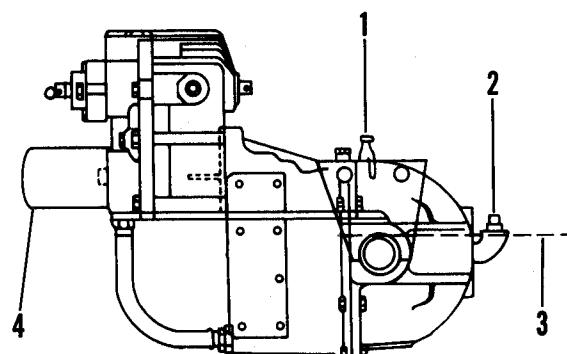


**CAUTION: Proper oil level is essential for dynamic braking.**

**IMPORTANT:** To prevent severe damage to transmission maintain proper oil level.

**NOTE:** Type 5W-30 or equivalent detergent type motor oil meeting requirements of American Petroleum Institute (A.P.I.) Service Classification SE should be used in hydrostatic system for normal operations. Have your Ariens Dealer change oil to SAE 30 if ambient temperature exceeds 80°F and tractor is worked heavily (such as plowing, tilling or when lift is continuously used to capacity).

Hydrostatic transmission, power steering, differential and hydraulic lift systems all operate from a common reservoir which is the rear axle housing. Oil level should be checked monthly or every twenty-five (25) hours of operation, whichever comes first.



- 1. Breather
- 2. Filler Plug
- 3. Oil Level
- 4. Oil Filter

**Figure 11: Transmission and Rear Axle Reservoir**

# Lubrication and Maintenance (Continued)

## Checking

**IMPORTANT:** Prevent dirt and foreign material from entering system when checking, adding or changing oil.

Position tractor on a flat level surface. Position hydraulic lift in its UP (raised) position to fully extend lift cylinder.

Position Speed Selector in neutral and set brake with engine running at 1/3 throttle.

Remove filler plug. Oil level should be at the top of filler elbow.

Use a small funnel to add oil and bring oil level to top of filler elbow, replace and tighten filler plug.

## Transmission Oil Filter

Change transmission Oil Filter every 500 operating hours or seasonally whichever comes first. It is not necessary to change transmission oil.

Position tractor on a flat level surface.



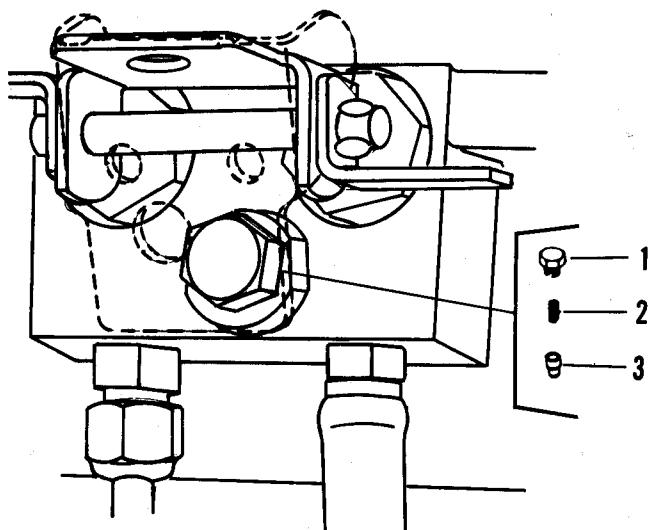
**CAUTION: Before changing filter, place Speed Selector in neutral, turn Ignition OFF, set Parking Brake and remove key.**

Place a container under filter to catch oil spillage as filter is removed. Raise Rear Deck. Use an oil filter removal tool to unscrew filter and discard old filter.

Fill new filter with fresh clean same type oil used in transmission to saturate element.

**NOTE:** Some oil may spill out of filter as it is rotated from vertical to horizontal position as you are installing it. Keep container in place to catch spilled oil.

Lubricate gasket with oil and spin filter on threaded adaptor to gasket contact. Hand tighten additional 1/2 to 3/4 turn. DO NOT overtighten.



1. Implement Plug
2. Spring
3. Cone

Figure 12: Transmission Priming

## Transmission Priming

**IMPORTANT:** Transmission must be primed before operation to prevent internal transmission damage.

Prime transmission by removing implement plug, spring and cone. Pour one pint of oil in port. Replace cone, spring and tighten plug.

Remove transmission filler plug and start engine. Run engine and add fresh clean oil to bring oil level to top of filler elbow. Replace and tighten filler plug.

Check for oil leaks at filter and plugs.

## Transmission Cooling

Check transmission cooling fan condition and keep it clean.

Debris accumulating on transmission cooling fins causes overheating. Check cooling fins and clean every fifty (5) operating hours or every 3 months whichever comes first. Check more often under dusty, dirty conditions.

# Lubrication and Maintenance (Continued)

## Front PTO Belts



**CAUTION:** Idler spring is under tension, grasp spring hook firmly by handle when releasing tension.

**NOTE:** Replace Front PTO Belts as a set. A spring hook is needed to release Idler Spring Tension.

To replace Front PTO Belts, insert spring hook thru access hole, hook spring, pull toward access hole and turn spring away from anchor rivet. Release Idler Spring tension carefully and remove belts.

Reverse above procedure to install new set of belts.

## Battery



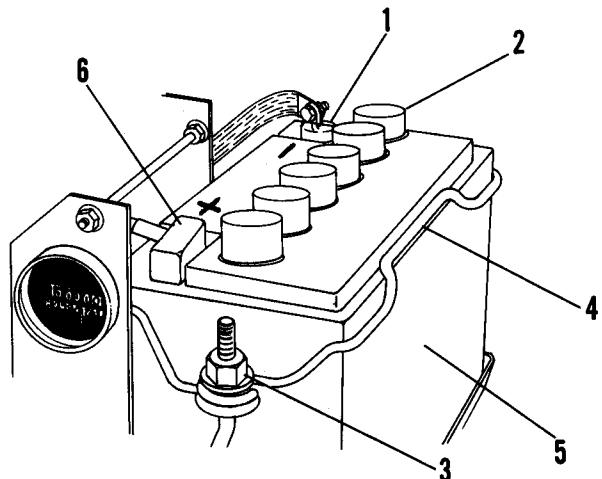
**WARNING:** Batteries produce explosive gases which can cause personal injury. DO NOT allow flames, sparks or any ignited object to come near battery. When charging or working near a battery, always shield your eyes. Always provide ventilation.



**CAUTION:** Keep batteries out of reach of children. Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing. In case of acid contact with skin, eyes or clothing, flush immediately with water for a minimum of 15 minutes. If acid is swallowed, drink large quantities of milk or egg or vegetable oil. Call a physician immediately.

Every 25 hours or each week check electrolyte level of each cell by removing caps one at a time. Electrolyte level should be at level indicator. Use distilled water to fill each cell if needed. Reinstall and tighten each cap.

**IMPORTANT:** When distilled water is added to battery during freezing weather, it must be charged to mix water with electrolyte or water will remain at top and freeze.



1. Negative (-) Terminal
2. Filler Plug
3. Tie Down Hardware
4. Tie Down Strap
5. Battery
6. Positive (+) Terminal

Figure 13: Battery

Keep battery and its terminals clean and inspect monthly to be sure of obtaining best performance.

## Removal



**WARNING:** DO NOT allow tools or other objects to come into contact with both terminals at same time. When removing battery from tractor, remove negative (-) cable first to reduce risk of sparks.

To clean terminals remove battery from tractor by removing cables. Loosen tie down rod nuts and lift battery out and clean or service away from unit. Remove corrosion from battery terminals and cable connections with a wire brush, then wash with a weak baking soda solution.

After cleaning apply a thin coat of grease or petroleum jelly to terminals and cable ends, to retard corrosion. Reinstall battery.

# Lubrication and Maintenance (Continued)



**CAUTION:** Connect positive (+) cable first, Negative (-) ground cable last.



**WARNING:** When charging battery remove it from tractor and make certain that you connect positive (+) lead of charger to positive (+) terminal and negative (-) lead to negative (-) terminal. Reversed connections can cause sparks and potential hazard.

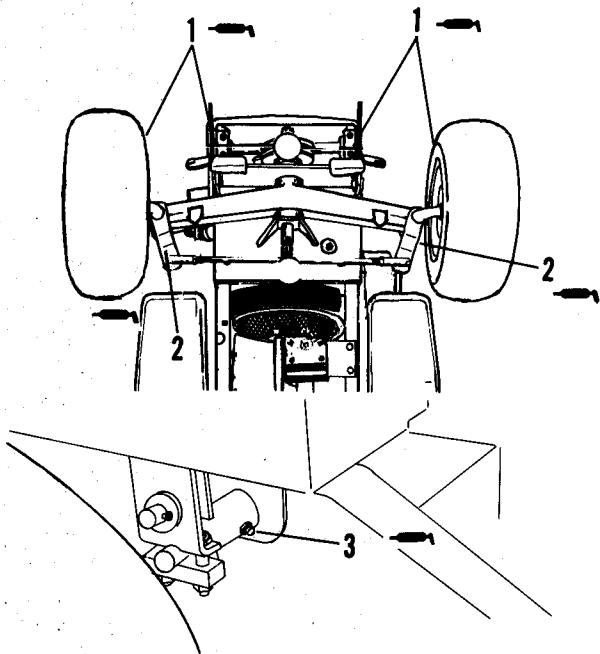
**NOTE:** To charge battery remove battery from tractor, remove vents and charge at a rate of 4 to 6 amps for 10 hours on a fully discharged battery.

**IMPORTANT:** Charging at a higher rate will damage battery.

## Oil and Grease Locations

**IMPORTANT:** Wipe each fitting clean before and after lubrication.

**NOTE:** Use Ariens Multi-Purpose Grease (Part Number 150) or good grade of general purpose grease at zerk fitting and oil at lubrication points.



1. Front Wheels
2. King Pins
3. Speed Selector Bushing

Steering system and Speed Selector components should be lubricated every 50 hours of operation or every 3 months whichever comes first.

## Tire Pressure

**NOTE:** Keep tires properly inflated at all times.

Check tire pressures at least once a month. Over-inflation may cause operator discomfort. Under-inflation causes short tire life.

**NOTE:** Replace and tighten tire valve caps after checking and inflating to prevent air loss.

**NOTE:** Use low pressure tire gauge for accurate pressure reading.

TIRE SIZE	LOADING
Front 16 x 6.50 x 8	10 p.s.i.
Rear 23 x 10.50 x 12	10 p.s.i.

## Seat

Clean seat regularly, using vinyl cleaner (not solvent). Extreme temperatures can damage seat when left unprotected against weather. If seat should tear, apply vinyl repair tape to protect damaged area.

Figure 14: Oil and Grease Locations

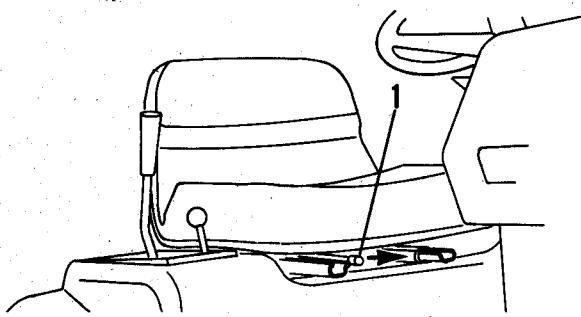
# Adjustments



**CAUTION:** Before making adjustment(s) turn off Ignition, set Parking Brake, and remove key.

**IMPORTANT:** DO NOT change engine governor setting or overspeed engine.

## Seat



**1. Seat Adjustment Lever**

**Figure 15: Seat Adjustment**

Adjust seat by moving Adjustment Lever in direction of arrow and slide seat so that controls can be reached safely. Release lever when seat is in proper position.

## Speed Selector

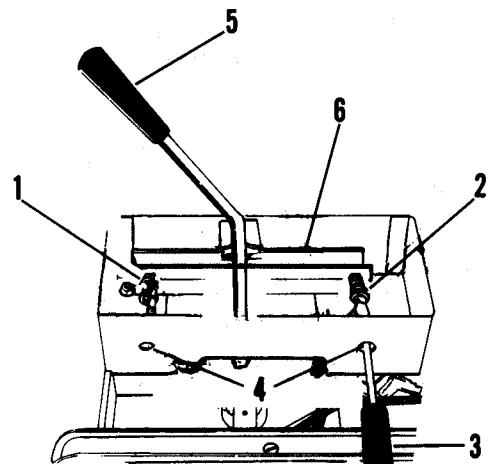
See your Ariens Dealer if tractor creeps when Speed Selector is in neutral (N) position.

## Speed Selector Friction

There must be spring pressure applied to Friction Angles to keep Speed Selector at selected setting.

**NOTE:** Friction Angles must be parallel.

If tractor slows down or speeds up without touching Speed Selector, increase spring pressure on Friction Angle by tightening Adjusting Screws equally. To adjust, raise Rear Deck and insert screw driver through access holes.



**1. Adjusting Screw      4. Access Holes  
2. Adjusting Screw      5. Speed Selector  
3. Screw Driver      6. Friction Angle**

**Figure 16: Speed Selector Friction**

If tractor speeds up, tighten front adjusting screw 1/4 turn more than rear adjusting screw. If tractor slows down, tighten rear adjusting screw 1/4 turn more than front adjusting screw.

## Brake

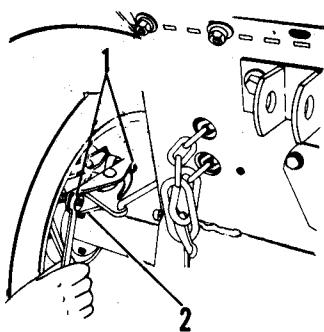
Tractor brakes require adjustment when Brake Pedal depresses over 2 inches before brake action begins.



**CAUTION:** When raising tractor, block securely with jack-stands.

**NOTE:** Open free wheeling valve (refer to Operation Section). Raise and block rear of tractor so that wheels can be rotated by hand to feel brake drag. Position Speed Selector in neutral.

# Adjustments (Continued)



1. Adjustment Nuts
2. Disc Brake Pad

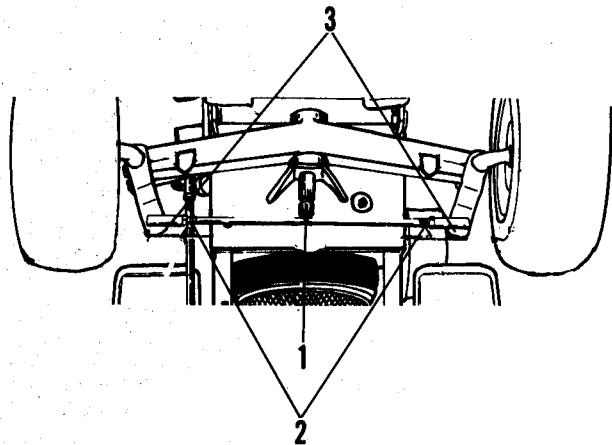
Figure 17: Brake Adjustment

Adjust the two (2) hex head nuts evenly on each wheel, while rocking wheel back and forth, until brakes start to drag. After brake starts to drag, back each nut off 1/8 turn.

## Steering

If looseness is noticed in steering system check hardware for tightness.

See your Ariens Dealer for adjustment if hardware is tight or steering wheel reaches full travel in either direction before spindle arm contacts axle stops.



1. Tie Rod
2. Jam Nuts
3. Tie Rod Ends

Figure 18: Tie Rod Ends

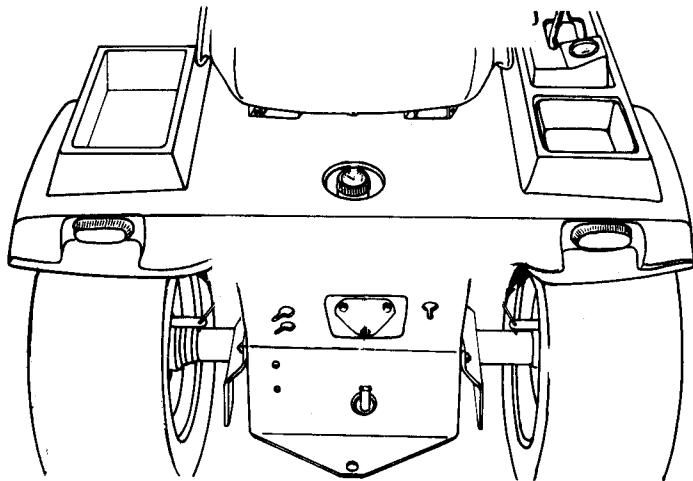
## Front Wheel Toe-In

Proper toe-in of front wheels is necessary to assure proper steering and to reduce tire wear. Proper toe-in is when the front of wheels are 1/16" to 1/8" closer together than the rear of wheels, measured at horizontal center line of rim flange.

If tractor steering wanders or excessive tire wear develops, toe-in should be checked. To change toe-in loosen jam nuts, turn tie rod clockwise to decrease toe-in, counterclockwise to increase. After correcting, tighten jam nuts.

## Rear Wheel Track

Rear wheels are assembled and shipped in narrow track. Wheel track can be changed to wide track by reversing wheels on hubs.



Narrow Wheel Tread Setting (Shown)  
23 x 10.50 x 12 = 32-1/2

Wide Tread  
23 x 10.50 x 12 = 35-1/4

Figure 19: Track Measurement

Jack and block rear of tractor with wheels off ground and remove wheel lug nuts. Remove wheel, reverse and remount on axle hub with valve stems inward. Replace and tighten lug nuts.



# 931 Series Hydro Garden Tractor Dealer Preparation Checklist

**NOTE:** Refer to Owner's Manual for detailed instructions.

- 1. Lubricate shaft and secure steering wheel.
- 2. Remove battery - Fill with electrolyte - Charge.  
(Specific Gravity 1265 ± 5)

Cell No. 1	Cell No. 2	Cell No. 3	Cell No. 4	Cell No. 5	Cell No. 6
------------	------------	------------	------------	------------	------------

- 3. Fill engine crankcase with recommended oil.
- 4. Check hydrostatic reservoir oil level.
- 5. Check Parking Brake.
- 6. Check Tire Pressure.
- 7. Check unit for proper lubrication (grease and oil pivot points).
- 8. Install battery.
- 9. Add recommended fuel.
- 10. Check Safety Interlock System.
- 11. Check Brake/Neutralizer.
- 12. Check Hydraulic Lift.
- 13. Check Electric Clutch.
- 14. Check instruments and lights.
- 15. Complete Warranty Registration form and mail to Ariens Company.
- 16. Using Owner's Manual instruct customer on controls and operation of unit. Emphasize safety and discuss the Safety Precautions.

Explain recommended lubrication and maintenance of unit.

Advise customer on adjustment(s).

Give customer his Owner's Manual and engine manufacturer's instructions. Inform him of his 5 year limited warranty. Advise him to thoroughly read and understand them.

## Adjustments (Continued)

On tractor with traction tread tires to maintain proper direction of rotation reassemble wheels on opposite sides of tractor with valve stems inward.

### Center Rockshaft Flotation Chain

The center rockshaft flotation chain allows for reduction of mower attachment weight on height gauge rollers. Thus it floats easier and independently of tractor hydraulic system. Hydraulic lift lever may be held in "DOWN" position until end of stroke and then retained in "HOLD" position. Mower deck will still float with chain adjusted for minimum weight on rollers.



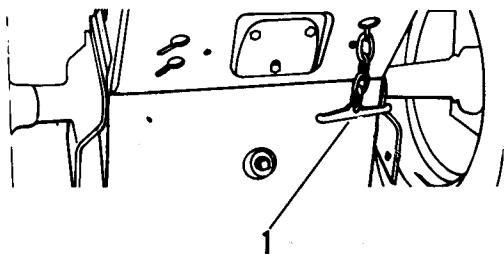
**CAUTION: Always grasp chain handle firmly when adjusting chain tension. Tension on chain could cause injury to hands. DO NOT grasp chain.**



**WARNING: Never store tractor in an enclosed area where fuel fumes may reach flame, sparks, pilot lights or an ignited object. Drain fuel out doors away from any ignition source. Use only approved fuel container.**

Your authorized Ariens Dealer is trained and equipped to service your tractor. A periodic check-up by your dealer will help reduce your maintenance costs.

Inspect tractor for visible signs of wear, breakage or damage. Order any parts required and make



1. Chain Handle

Figure 20: Center Rockshaft Flotation Chain

Adjust chain tension by placing chain third link into notch on back of tractor frame when mower is on tractor. Decrease tension for more weight on mower height gauge rollers and increase tension for less weight. Release tension when mower is removed.

## Storage

necessary repairs to avoid delays when beginning use again.

Clean tractor thoroughly. Touch up all unpainted areas to avoid rust.

## Engine

When storing tractor for extended periods, we recommend stabilization of fuel with a gum and varnish preventing anti-oxidant stabilizer or empty fuel tank and carburetor.

Cover unit and store it in a dry moisture free area.

## User Service Components

Publications are available for tractor owners who wish to perform some of their own maintenance and service operations. Should a complete parts and/or repair manual be desired, use the convenient order form supplied with your warranty registration or order by machine model and serial number.

Model Number \_\_\_\_\_  
Serial Number \_\_\_\_\_  
Engine Serial Number \_\_\_\_\_  
Parts Manual . . . . . @ \$4.00 each . . . . . \$ \_\_\_\_\_  
Repair Manual . . . . . @ \$8.00 each . . . . . \$ \_\_\_\_\_  
Postage & Handling . . . . . \$ 3.00  
Wisconsin Residents Add 5%  
Sales Tax \$ \_\_\_\_\_  
Total \$ \_\_\_\_\_

Please submit this amount by check or money order to:

ARIENS SERVICE  
655 West Ryan Street  
Brillion, WI 54110-1098

# Specifications

Speeds:	
Forward	Variable 0-6.5 mph
Reverse	Variable 0-3 mph (5 kmph)
Gas Tank Capacity	4.5 gallons (17 liters)
Tires	
Front (10 PSI)	16 x 6.50 x 8
Rear (10 PSI)	23 x 10.50 x 12 (All 2-ply) (All turf type)
Turning Radius	37"
Dimensions:	
Length	75"
Width	43"
Height	45-3/4"
Wheelbase	48" (121.9 cm)
Engine Oil Type(s)*	Above 32°F - SAE30 Below 32°F - SAE 5W-30
Transmission Lube	SAE 5W-30 Detergent Type
Allowable Added Front/Rear Axle Weight	405 lbs. - Front 1385 lbs. - Rear

## Attachments

- 831004 54" Front Blade
- 831017 Ariens Trailer
- 831018 Trailer Vac (Requires 831017)
- 831019 Bagger Vac
- 831026 60" Rotary Mower
- 831031 48" Rotary Mower
- 831040 48" Sno-Thro
- 831038 42" Rotary Mower
- 831039 42" Rotary Tiller

## Accessories

- 731005 Tire Chains for 23/10.50 x 12 Tires
- 731011 Category "O" 3-Point Hitch
- 731013 Rear Traction Tread Tire Kit
- 731023 Mounting Brackets - Front Weight Box
- 731026 Weight Box Kit - Front or Rear Mounted
- 731030 100 lb. Rear Wheel Weight Kit -  
2.50 lb. Weights
- 731031 150 lb. Rear Wheel Kit -  
2.75 lb. Weights
- 710997 Slicer Bar for 48" Sno-Thro
- 731049 Cold Start Package
- 731054 Rear PTO (GT18)